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CORN EARWORM RESISTANCE IN COMMERCIAL SWEET CORN HYBRIDS[1]

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Sweet corn has been tested for resistance to the corn earworm (Heliothis zea (Boddie)) at Lafayette, Ind., and Weslaco, Tex., for the last 20 years, and at Belle Glade, Fla., for the last 3 years. Tests have also been made at State College, Miss., Urbana, Ill., and Austin, Ind. In all tests the ears were subjected to a heavy natural infestation. At Lafayette and Urbana at least three additional newly hatched larvae were placed among the fresh silks at the tip of each ear.

In the course of these studies most of the State and Federal experiment stations working on sweet corn have sent their most promising crosses to us for testing. Many of the commercial breeders also cooperated directly or through the State stations. Thus the corn earworm reaction of most of the hybrids appearing in the last few years was known before the hybrid was placed on the market. Hybrids have also been purchased on the open market for testing. Several thousand hybrids have been tested, but only those that have been given a name or number and made available for commercial use are included in this list.

Several hybrids were obtained from two or more sources. For example, Carmel Cross was obtained from the Connecticut station and five commercial sources; seed from all these sources gave much the same results. Fifteen selections of Golden Cross or Golden Cross Bantam, as it was variously called, received from ten sources also tested much the same except where different inbreds were used in producing the hybrid. Thus, Improved Golden Cross from the Indiana station was much more resistant than the original Golden Cross (P39 x P51) from the same station.

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[1] The information presented here supplements that given in Entomology and Plant Quarantine E-745, issued in 1948.

[2] Now with the Arizona Agricultural Experiment Station.

These hybrids were tested in one or more seasons, and many of them at two or more places during a season.

As each hybrid plot was harvested it was rated according to the earworm injury to the ears. The average amount of injury was then found for all plots in the test, and the injury for each hybrid determined as a percentage of this average. A similar percentage was found for each hybrid in all other tests in which it was used. The earworm injury as shown in Table 1 is the average of these percentages. The various tests occasionally gave somewhat differing percentages, but no hybrid was found that appeared susceptible in one test and resistant in another. Since an effort was made to have all ears in the plot infested, the results are based on the injury done to the ear rather than on the percentage of ears infested. They are, therefore, probably of more interest to the canner than to the grower and shipper of green market corn. However, a low percentage would indicate that a number of ears were free of injury.

The very high resistance shown by Golden Mire may be due to the fact that in the one replicated test it silked several days before anything else and the field as a whole was not attractive to the adult moths.

Sources of Seed[3]

1. Aggler-Musser Seed Co., Los Angeles, Calif.
2. Arizona Agricultural Experiment Station, Tucson, Ariz.
3. Associated Seed Growers, Milford, Conn.
4. Connecticut Agricultural Experiment Station, Storrs, Conn.
5. Cornelli Seed Co., St. Louis, Mo.
6. Crookham Co., Caldwell, Idaho
7. Davis Seed Co., Lebanon, Ind.
8. Eastern States Farmer's Exchange, West Springfield, Mass.
9. Ferry Morse Seed Co., Detroit, Mich.
10. Harris Seed Co., Rochester, N. Y.
11. Huntington Brothers Seed Co., Windsor, Conn.
12. Illinois Agricultural Experiment Station, Urbana, Ill.
13. Indiana (Purdue) Agricultural Experiment Station, Lafayette, Ind.
14. Iowa Agricultural Experiment Station, Ames, Iowa
15. Livermore Seed Co., Honeoye Falls, N. Y.
16. Michael Leonard Seed Co., Ames, Iowa
17. Northrup King Co., Minneapolis, Minn.
18. Ohio Agricultural Experiment Station, Columbus, Ohio
19. Robson Seed Co., Hall, N. Y.
20. Rogers Brothers Seed Co., Inc., Chicago, Ill.
21. U. S. Department of Agriculture
22. F. H. Woodruff & Sons, Toledo, Ohio

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[3] The inclusion of the names of companies supplying these seeds does not imply the Department's endorsement of their products.

Table 1.--Earworm reaction of commercial sweet corn hybrids.

Hybrid	Source of seed[1]	Number of seasons tested	Average percent of earworm injury
Aristogold Bantam No. 1	16	1	98
Evergreen	16	9	107
Asgro Golden 50	3	1	119
Big Golden Cross	15	2	118
Big Lincoln	4	2	161
	15	1	147
Big TM	16	1	75
Bouquet	14	1	133
Brookhaven	4	4	67
Calumet	3	6	90
Carmel Cross	4	1	108
	5	1	113
	10	1	106
	11	1	104
	15	1	107
	20	1	108
Cheddar Cross	6	3	104
Deep Gold	16	1	82
Dixiana	16	1	129
Dixie Gold	16	2	84
Double Duty	14	2	110
	10	1	92
Early Honey Sweet	16	1	75
Early Valley Gold	16	1	133
Erie	3	2	100
Ever Tender	16	1	96
Flagship (KVF-45)	5	2	116
F. M. Cross	9	1	126
Golden Bantam (Extra Early)	17	1	103
(Standard)	17	1	90
Golden Best	16	1	107
Golden Blond	16	1	112
Golden Bounty	16	2	106
Golden Cross	6	1	106

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[1] See page 2.

Table 1.--Continued

Hybrid	Source of seed[1/]	Number of seasons tested	Average percent of earworm injury
Golden Cross (Early)	15	1	103
(NC)	17	1	103
(SL)	6	1	104
(Tall)	17	1	92
(VT20)	17	1	114
(White silk)	16	3	122
Golden Cross Bantam	5	1	108
	7	3	130
	9	2	97
	10	1	85
(P39 x P51)	13	5	117
(Imp)	13	1	71
(T51)	9	1	114
(T. strain)	1	1	124
Golden Crown	19	2	86
Golden Deep	16	1	99
Golden Glory	17	2	114
Golden Grain	16	3	101
Golden Green	16	1	100
Golden Harvest	6	1	101
	17	2	88
Golden Hybrid No. 4	22	1	94
8	22	2	109
9	22	1	103
10	22	3	101
11	22	1	100
52F	20	1	94
1910	22	2	96
2057	22	5	92
2474	22	1	92
2852	22	1	107
3157	22	1	123
3171	22	1	97
3174	22	1	97
3210	22	1	101
3494	22	2	91
Golden Jewel	8	2	97
Golden Longcross	16	2	128
Golden Mammoth	4	1	105

Table 1.--Continued

Hybrid	Source of seed[1]	Number of seasons tested	Average percent of earworm injury
Golden Mire	8	1	7
Golden Nugget	20	2	94
Golden Princess	17	1	107
Golden Security	22	6	104
Golden State	16	1	91
Golden Stowell	4	1	100
Golden Sweet	16	3	99
Golden West	16	2	76
Gold Rush	5	1	96
Grant	11	2	120
	15	1	104
Greely	15	2	120
Gulf Coast	16	4	108
Hanford	4	5	85
Honey Cross	16	1	80
Hoosier Bantam	13	3	83
Hoosier Gold	6	1	88
	13	1	106
	20	1	92
Huron	3	6	100
Hybrid No. 24	9	1	113
25A	9	1	88
40	9	1	112
50A	9	1	111
69	9	1	102
197	17	1	82
199	17	1	96
Hybrid Stowell	16	2	76
Illinois Cogent 13	20	1	103
Illinois No. 10	12	5	91
16	12	3	83
17	12	3	85
20	12	3	84
21	12	4	85
Iona IP 39 x I45	14	6	112
	22	3	114
	16	2	136
P39 x I45	21	3	105
(White silk)	16	1	107
D.R.	16	5	108

Table 1.--Continued

Hybrid	Source of seed[1/]	Number of seasons tested	Average percent of earworm injury
Iochief	3	1	114
	5	1	108
	14	5	129
	17	1	105
	20	1	107
B	16	1	141
(ES)	17	1	101
(White silk)	14	2	103
	17	1	91
Iogent 11	14	1	103
Iogold 51	14	3	139
	15	1	87
	20	1	90
	22	1	94
Iogreen 16	14	1	113
56	14	1	63
Iosquaw	14	2	105
Jefferson	15	1	95
Jerseyana	16	1	87
Katahdin	22	1	98
KVF 50-35	5	1	85
51-60	5	2	122
51-180	5	1	132
Lee	4	1	115
	11	2	98
Lincoln	4	2	116
	11	1	101
	15	1	99
Madison	15	1	103
Magragold	15	1	92
Marcross	11	1	102
	15	1	104
	22	1	101
Marketwise	16	1	105
Narrowmost	16	2	102
New Earligold	22	1	115
New Jersey	22	1	104
New Wilson	15	1	102
Normandie (Imp)	5	1	87

Table 1.--Continued

Hybrid	Source of seed[1/]	Number of seasons tested	Average percent of earworm injury
Northern Cross	10	1	99
North Star	10	1	123
Ohioana	16	1	96
Ohiogold No. 1	18	3	95
2	18	2	76
3	18	3	102
4	18	3	65
Old Hickory	4	1	154
Papago Sweet	2	1	34
Parade A	6	3	73
Patrick Henry	15	1	115
Paymaster	6	3	76
	22	2	89
Peoria	3	1	90
Pershing	4	5	65
Pilgrim	8	2	107
Plain Gold	12	4	102
Prairie Gold	16	1	117
Prosperity	5	1	95
Purple Cross	4	1	123
Rio Gold	16	2	108
Sencross (Imp)	22	1	92
Seneca Arrow	19	2	92
Seneca Chief	19	2	102
Seneca Dawn	19	1	106
Seneca Market	19	2	96
Seneca Warrior	19	1	95
Sherman	15	2	95
Silvergent	16	1	107
Silvergrain	16	1	85
South Coast	16	1	75
South Cross	16	2	90
Southern Shipper	17	5	87
Spancross	15	1	124
	11	1	124
Sun Up	10	1	124
Sweet-an-Gold	5	2	107
Sweet Sixteen	16	1	95
Sweet Texas	16	1	103

Table 1.--Continued

Hybrid	Source of seed[1/]	Number of seasons tested	Average percent of earworm injury
Tender Chief	16	2	112
Tender Blond	16	2	97
Tender Freezer	16	2	85
Tender Gold	16	2	117
Tendermost (Regular)	16	2	119
(White silk)	16	2	86
Tons-O-Gold	17	1	106
Top Flight Bantam	16	2	98
Tristate	16	1	98
Tristate Imp	16	1	93
12 row Blend (Early)	17	1	112
(Mid Season)	17	1	89
Valley Gold	16	1	123
(Early)	16	1	116
Victory Golden	22	3	97
Washington	11	1	107
	15	1	110
White Cross Bantam	16	1	94
White Silk Ioana	16	1	107
Wilson	4	2	130
471-U6 x 81-1	21	7	46

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